

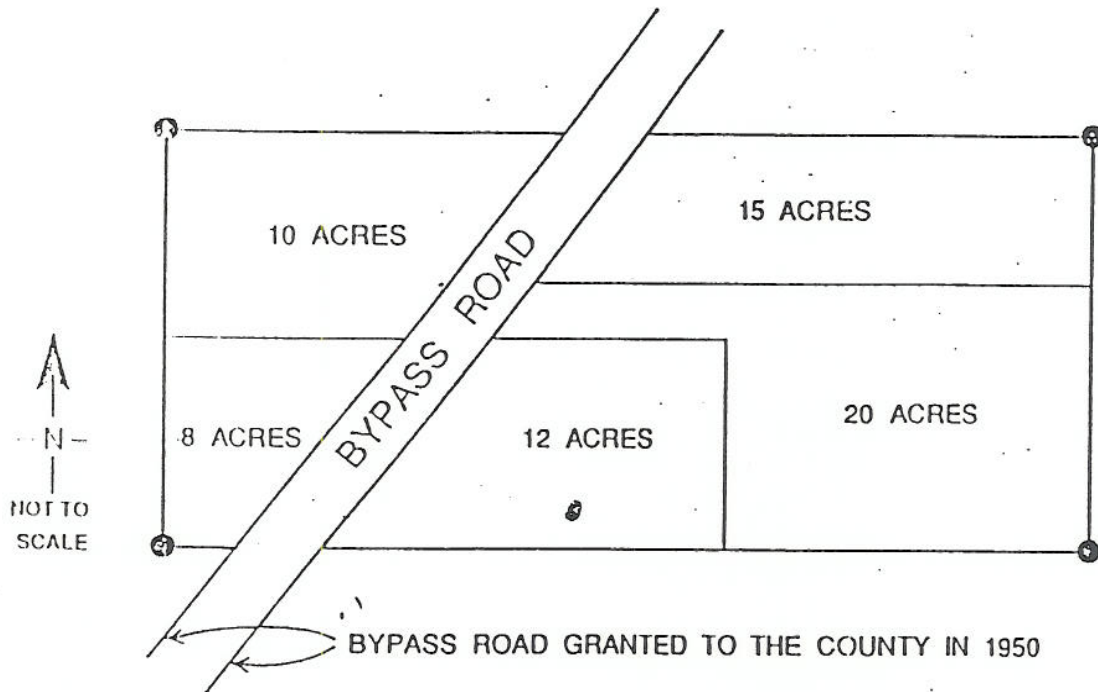
# PROBLEM A1

10 Points

Sheet 1 of 2

## PROBLEM STATEMENT

Given the information denoted in the diagram below, the client has asked you to provide surveying and mapping services necessary to create the parcels as shown.



### LEGEND

- ④ MONUMENTS FOUND DENOTING THE CLIENT'S PROPERTY THAT WAS PURCHASED IN 1940

## PROBLEM REQUIREMENTS

The answers to the following questions are based upon current California law. You are to answer each of the questions briefly in your own words, or indicate the appropriate citations.

1. What type of map or maps, if any, are required for this land division? 1 Point
2. If a map is required, who shall prepare it? 1 Point
3. Explain whether or not the new parcels are required to be monumented. 1 Point
4. If monuments are required or requested, when must they be set? 1 Point

## PROBLEM REQUIREMENTS (continued)

5. If a map or maps are required, under what conditions would holders of beneficial interests not be required to sign? 1 Point
6. Excluding lawsuits and moratoriums, and if a final map or parcel map is required, what is the maximum time allowed to record the map? 1 Point
7. Under what conditions may the monuments called for on a parcel map or final map be set by another licensed land surveyor? 1 Point
8. After the completion of your work on the client's property, a tractor removed the monument that you found at the exterior southeast corner. The contractor asks you to replace the corner. What document, if any, would you prepare? 1 Point
9. Assuming it is necessary to gain access to the neighboring property to conduct your field survey and the neighbors question your right to be on their property, how would you respond? 1 Point
10. How can non-title information (i.e., building setback lines, etc.) be filed or recorded with a subdivision map? 1 Point



## PROBLEM REQUIREMENTS

1. Describe the procedure you would use to analyze the data required for providing a legal description of your client's property; this legal description must be acceptable to the title company.

6 Points

2. What interpretations of those data would you make to determine your client's parcel dimensions? Show the dimensions along the northerly and southerly lines of Lot 2.

4 Points

3. Prepare the legal description of your client's parcel.

10 Points



# PROBLEM A3

14 Points

Sheet 1 of 2

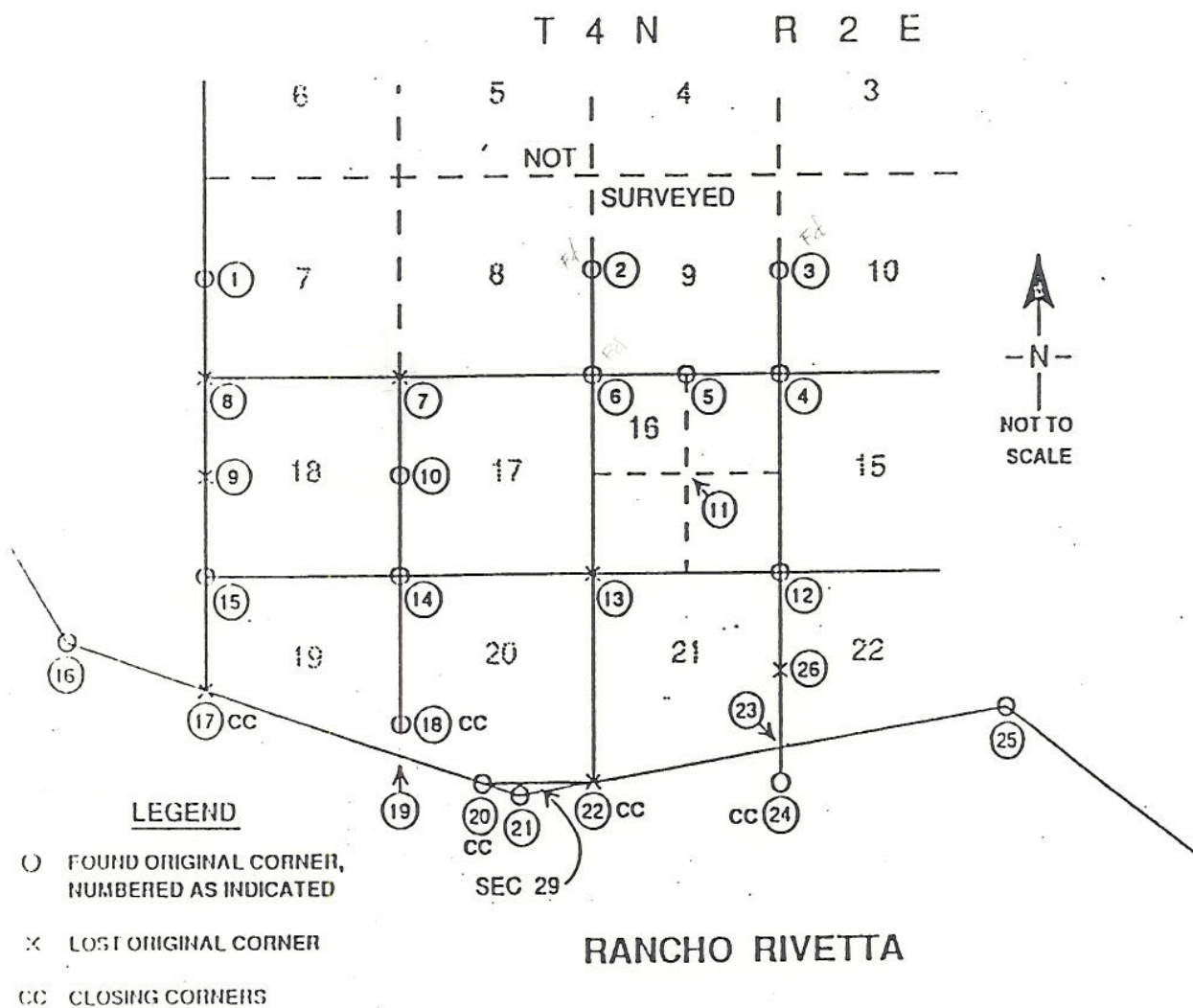
## PROBLEM STATEMENT

The portion of a township plat shown below has been annotated to show which corners are lost and found at this date. Township 4 North, Range 2 East is bounded by regularly surveyed townships to the west, north, and east, and by Rancho Rivetta to the south.

The found original corners are U.S. Government survey monuments described in the notes of the survey. There are no topographical or accessory calls recovered; the lost original corners have been properly identified as such.

No excessive distortion was found in the record dimensions indicated in the plat and field notes for the rancho and township.

## Exhibit Plat



## PROBLEM REQUIREMENTS

1. Explain the procedure necessary to establish the corners in the following order: 8, 9, 17, 19, 23, 22, 26, 13, 11, 7

10 Points

2. As a licensed land surveyor, what would you be required to file to show the monumentation of:

- a. Corner 11
- b. Corner 5

1 Point

1 Point

3. Describe or cite the definition of:

- a. a lost corner
- b. an obliterated corner

1 Point

1 Point

# PROBLEM A4

16 Points

Sheet 1 of 2

## PROBLEM STATEMENT

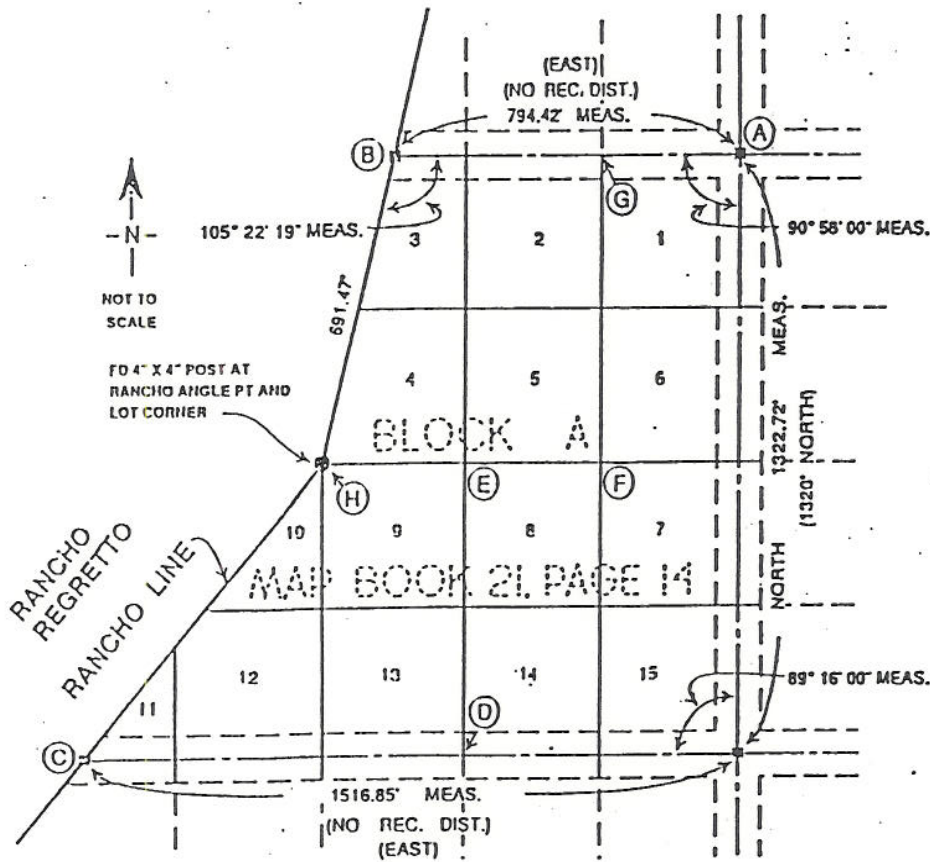
Your client is interested in purchasing a portion of Block A of the McDonald's Farm Subdivision in Marin County, State of California as shown on the copy of the record map below. The client would like to purchase Lots 2 through 5 and Lots 9 through 13 of the McDonald's Farm Subdivision, Map Book 21, Page 14. You have obtained the measurements from your field crew as shown on the map below. The original map filed in 1920 reveals that all square lots were intended to contain 2.5 acres. The streets are 60 feet wide. A bearing of North shall be assumed for the center line of the street on the east side of Block A.

## PROBLEM REQUIREMENT

On the sheet provided, show the bearing and distance for each line of the parcel to be purchased. Use the grid paper provided to show your work.

16 Points

Block A, McDonald's Farm Subdivision



### LEGEND

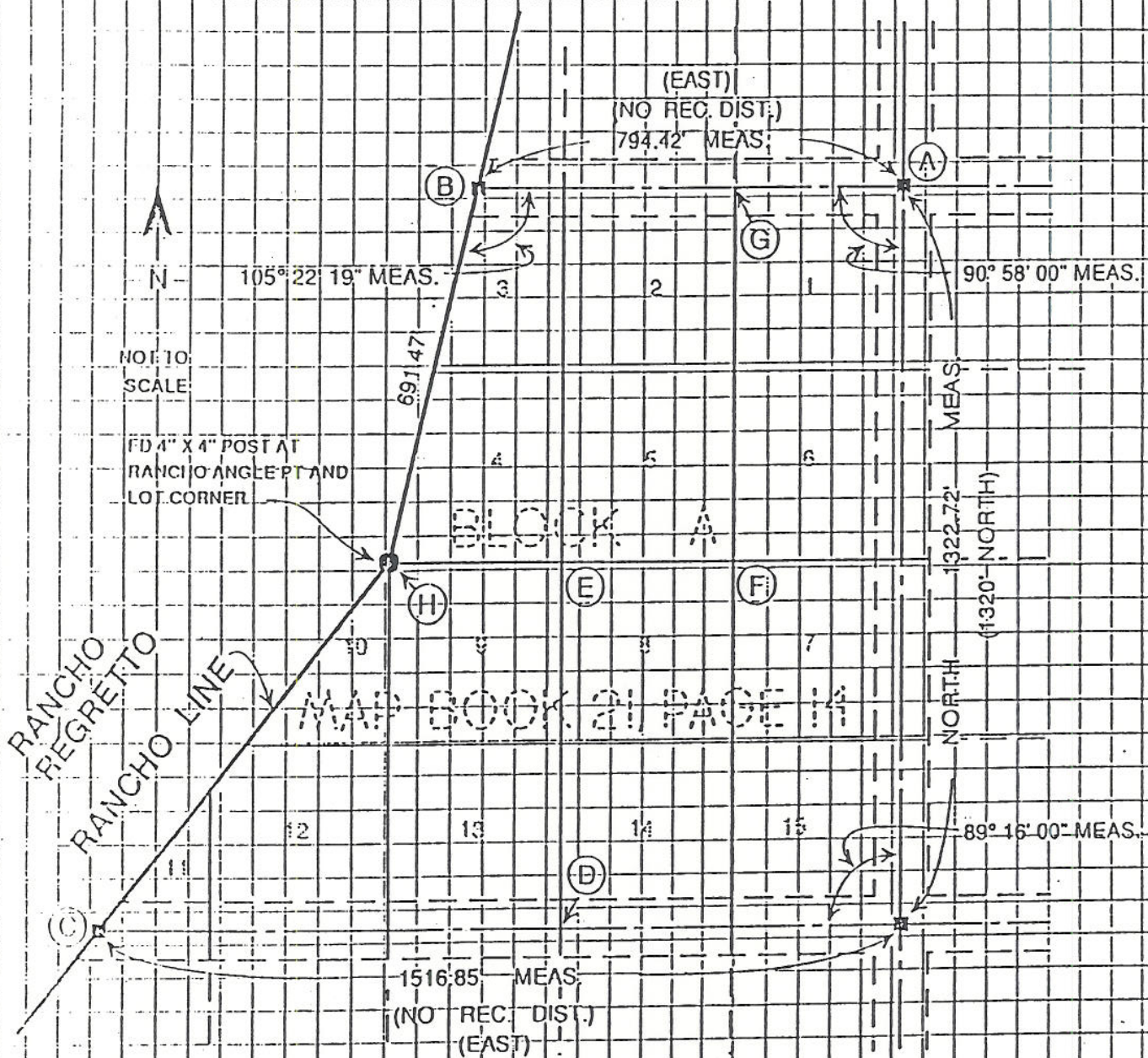
■ DESIGNATES FOUND ORIGINAL 2" X 2" REDWOOD HUBS SET AT BLOCK CORNERS  
NOTE: MONUMENTS (B) & (C) ARE ON THE RANCHO LINE

( ) INDICATES RECORD INFORMATION

○ CORNER IDENTIFIER



## Block A, McDonald's Farm Subdivision



### LEGEND

- DESIGNATES FOUND ORIGINAL 2" X 2" REDWOOD HUBS SET AT BLOCK CORNERS  
NOTE: MONUMENTS (B) & (C) ARE ON THE RANCHO LINE
- ( ) INDICATES RECORD INFORMATION
- CORNER IDENTIFIER



	Bearing	Distance	
a. Line A -- G	_____	_____	2 Points
b. Line B -- G	_____	_____	2 Points
c. Line C -- H	_____	_____	2 Points
d. Line D -- G	_____	_____	2 Points
e. Line E -- D	_____	_____	2 Points
f. Line F -- E	_____	_____	2 Points
g. Line G -- F	_____	_____	2 Points
h. Line H -- B	_____	_____	2 Points

# PROBLEM A5

20 Points

Sheet 1 of 4

## PROBLEM STATEMENT

California coordinates and basis of bearings for Station ROTS are shown on Sheet 2 along with data for a solar observation at Station RUK.

## PROBLEM REQUIREMENTS

Use the data provided and the diagram on the following page to solve the problem requirements below. Show your work.

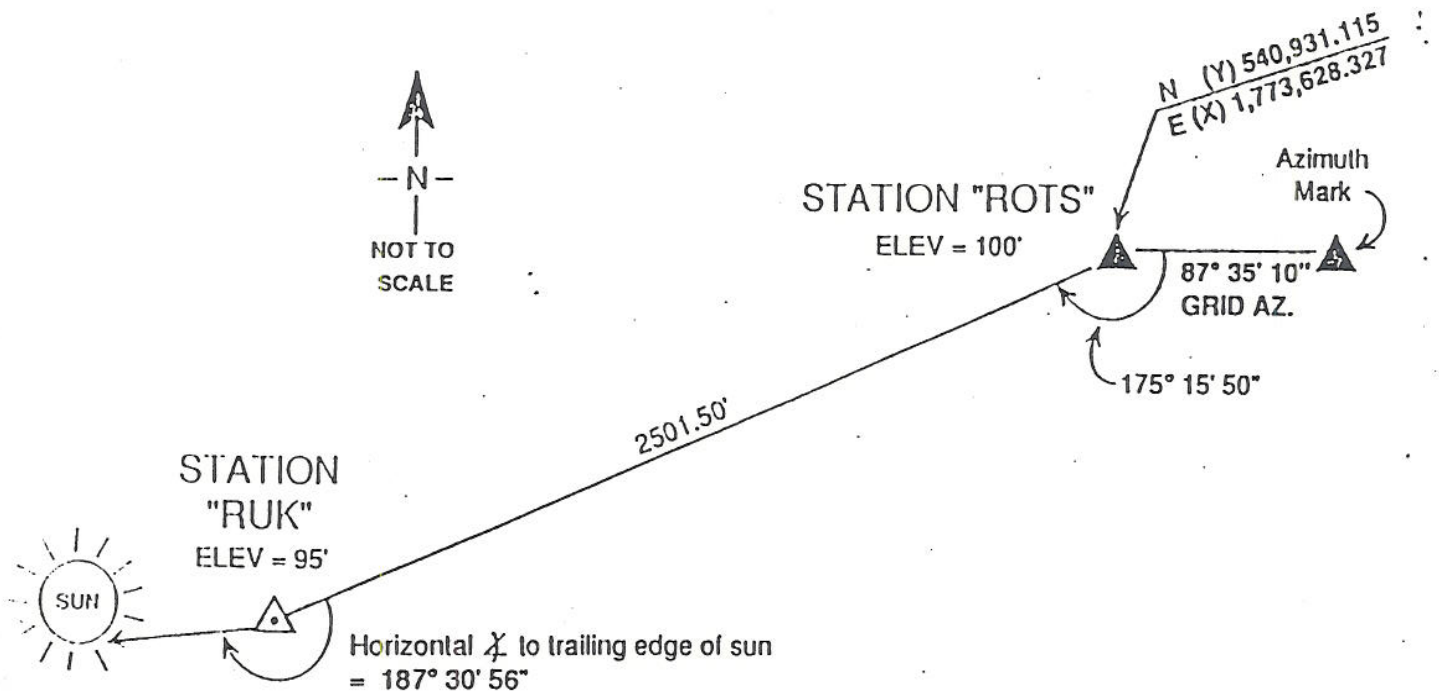
1. Determine the latitude and longitude of Station RUK to the nearest 0.01 seconds. 10 Points
2. Reduce the solar observation either by the hour angle or the altitude method. 5 Points
3. Determine the angle of closure at station RUK. 5 Points

# PROBLEM A5

20 Points

Sheet 2 of 4

California Zone 4, NAD 27



## SOLAR OBSERVATION

Date = May 5, 1988

Time = 5:23:35.0 PDST

Watch is 0.5" fast

D.U.T. = -0.3"

Vert.  $\angle$  to center of sun =  $28^{\circ} 05' 49''$

(Corrected for parallax and refraction)

## Solar Ephemeris Table

	GHA	Declination	SemiDiameter
May 4 W	180° 48' 22.7"	15° 58' 04.3"	15' 53.2"
May 5 Th	180° 49' 44.8"	16° 15' 19.0"	15' 53.0"
May 6 F	180° 50' 58.4"	16° 32' 17.5"	15' 52.7"
May 7 S	180° 52' 03.3"	16° 48' 59.7"	15' 52.5"



# PROBLEM A5

20 Points

Sheet 3 of 4

## Lambert Projection for California IV Table I

Lat.	R feet	Y' y value on central meridian feet	Tabular difference for 1 sec. of lat.	Scale in units of 7th place of logs	Scale expressed as a ratio
36° 31'	28,222,155.97	430,775.99	101.12233	-249.4	0.9999426
32	28,216,088.63	436,843.33	101.12250	-251.6	0.9999421
33	28,210,021.28	442,910.68	101.12267	-253.5	0.9999416
34	28,203,953.92	448,978.04	101.12300	-255.0	0.9999413
35	28,197,886.54	455,045.42	101.12333	-256.1	0.9999410
36° 36'	28,191,819.14	461,112.82	101.12350	-256.9	0.9999408
37	28,185,751.73	467,180.23	101.12383	-257.2	0.9999408
38	28,179,684.30	473,247.66	101.12417	-257.3	0.9999408
39	28,173,616.85	479,315.11	101.12433	-256.9	0.9999408
40	28,167,549.39	485,382.57	101.12483	-256.2	0.9999410
36° 41'	28,161,481.90	491,450.06	101.12500	-255.1	0.9999413
42	28,155,414.40	497,517.56	101.12533	-253.7	0.9999416
43	28,149,346.88	503,585.08	101.12567	-251.9	0.9999420
44	28,143,279.34	509,652.62	101.12617	-249.7	0.9999425
45	28,137,211.77	515,720.19	101.12633	-247.1	0.9999431
36° 46'	28,131,144.19	521,787.77	101.12667	-244.2	0.9999438
47	28,125,076.59	527,855.37	101.12717	-240.9	0.9999445
48	28,119,008.96	533,923.00	101.12750	-237.3	0.9999454
49	28,112,941.31	539,990.65	101.12783	-233.3	0.9999463
50	28,106,873.64	546,058.32	101.12833	-228.9	0.9999473
36° 51'	28,100,805.94	552,126.02	101.12867	-224.2	0.9999484
52	28,094,738.22	558,193.74	101.12917	-219.0	0.9999496
53	28,088,670.47	564,261.49	101.12950	-213.6	0.9999508
54	28,082,602.70	570,329.26	101.12983	-207.7	0.9999522
55	28,076,534.91	576,397.05	101.13033	-201.5	0.9999536
36° 56'	28,070,467.09	582,464.87	101.13083	-194.9	0.9999551
57	28,064,399.24	588,532.72	101.13133	-188.0	0.9999567
58	28,058,331.36	594,600.60	101.13167	-180.6	0.9999584
59	28,052,263.46	600,668.50	101.13217	-173.0	0.9999602
37° 00'	28,046,195.53	606,736.43	101.13283	-164.9	0.9999620
37° 01'	28,040,127.56	612,804.40	101.13317	-156.5	0.9999640
02	28,034,059.57	618,872.39	101.13367	-147.7	0.9999660
03	28,027,991.55	624,940.41	101.13417	-138.6	0.9999681
04	28,021,923.50	631,008.46	101.13467	-129.0	0.9999703
05	28,015,855.42	637,076.54	101.13517	-119.2	0.9999726

## Constants for California Zones

Constants	I	II
C	2,000,000	2,000,000
Central Meridian	122° 00'	122° 00'
$R_b$	24,792,436.23	26,312,257.65
$y_o$	547,078.17	516,407.35
$\ell$	0.65388 43192	0.63046 79732
$\frac{1}{2} \rho_o \frac{1}{\sin 1''}$	$2.358 \times 10^{-10}$	$2.359 \times 10^{-10}$
$\log \frac{1}{2} \rho_o \frac{1}{\sin 1''}$	0.372 4621 - 10	0.372 6393 - 10
$\log \ell$	9.81550 09227 - 10	9.79966 30299 - 10
$\log k$	7.60545 70526	7.61359 91422

Constants	III	IV
C	2,000,000	2,000,000
Central Meridian	120° 30'	119° 00'
$R_b$	27,512,992.04	28,652,931.96
$y_o$	455,516.19	470,526.63
$\ell$	0.61223 20427	0.59658 71443
$\frac{1}{2} \rho_o \frac{1}{\sin 1''}$	$2.359 \times 10^{-10}$	$2.360 \times 10^{-10}$
$\log \frac{1}{2} \rho_o \frac{1}{\sin 1''}$	0.372 7729 - 10	0.372 8843 - 10
$\log \ell$	9.78691 60557 - 10	9.77567 38907 - 10
$\log k$	7.62062 61281	7.62714 43424